HUMAN PROPORTIONS IN GROWTH.

Human Proportions in Growth:

EXEMPLIFIED IN

A CHART,

SHOWING

THE COMPLETE MEASUREMENT

OF THE HUMAN BODY,

For every Size and Age during the Years of Juvenile Growth.

WITH FULL INSTRUCTIONS FOR ITS USE.

By DANIEL EDWARD RYAN.

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Author.

Book and Chart No.

TO

J. B. West, Esq.

THE FRIEND,

WHOSE COUNSELS AIDED AND WHOSE APPRECIATION INSPIRED

MY EFFORTS TO EXCEL;

WHOSE JUDICIOUS CRITICISM, DIRECTED BY A PROFOUND

KNOWLEDGE OF THE ART WE BOTH PROFESS,

GUIDED MY LABORS;

I DEDICATE THIS WORK.

THE AUTHOR.

Preface.

IN submitting this work to the members of my Profession and to the Trade generally, I take advantage of the author's privilege of a Preface, to make a few remarks. When, some years ago, I determined to make a special study of Childrens' Garments, I found, on entering this branch of the business, an utter absence of all means for the production of children's garments by system and proportions of age and size. Beyond a few good patterns held by a limited number and guarded with extreme jealousy, no definite knowledge of the Juvenile Clothing business seemed to exist. Whatever good patterns there were in the country were originated in the most of cases experimentally; and by a constant system of revision, based on a close observation of the requirements of living subjects, were toned down to correct proportions and fit. The amount of trial involved in the production of good patterns on such a basis, made them of great value, and almost impossible to obtain. As to any system by which to reproduce them and the proportions upon which they were based, it was unknown, or if known, was A DEAD SECRET.

I determined to attain a thorough and exhaustive knowledge of the law of growth and the proportions of the human body during all the years of juvenile growth, and of the harmony of the growing form of any size. I turned to nature, and dealt only with the living subject. After the labor of years in measuring children of all ages and sizes, and compiling the averages into a system of common sense tables, I have the pleasure to know that my work is completed, and that it is my high privilege to be able to benefit others, be it ever so little, by supplying the lights that have guided me to success.

With no purpose of eventually placing this work before the public, I have labored on it, inspired only by professional pride and the enthusiasm of discovery. I am not yet fully convinced of the wisdom of publishing, and feel a hesitation to become the pioneer in a field where others have left no guide or standard of comparison to aid the public or myself in judging this work; but I yield to the urgent requests of many kind friends to place it within the reach of all, and if I succeed in winning the consideration of a Profession of which I am proud to be a member, by adding something useful and beneficial to the common stock of knowledge, I am amply repaid for many trials and sacrifices.

DANIEL E. RYAN.

138 *Grand Street, New-York.*

Introductory.

WITH this work, the author submits a few preliminary remarks as to its origin. intent, and scope. It originated from the complete measurement of over twenty-six hundred children, boys and youths, taken in different parts of the country, from Massachusetts to California, and of all classes of people, who were measured by the author personally. Also, from the reports of managers of institutions containing large numbers of boys,—and lastly from the proportions that form *the base of average* of the stocks of the leading manufacturing and retail houses of America.

The *law of growth*, on a strictly anatomical basis, has been in the first place obtained through the living subject, and the demands of the "Clothing Trade" complied with by harmonizing the proportions to suit the *practical standard required* in the productions of patterns and clothing.

From a technical or medical standpoint, the proportions are not absolute to nature in every case, and the slight changes made have been as just stated, to give a practical basis to insure a result thoroughly proved to be an entire success. This work supplies a standard of proportion in widths, or properly girths, for juveniles of every age, based on the practical average for each age, with a corresponding scale of height dividing the figure into parts from head to foot in such a manner that every length in any garment can be instantly located to suit the height of figure or the prevailing fashion, thus insuring uniformity in sets of patterns.

The principle laid down and adapted to the growth of the figure comprehends every change of fashion for all time to come; and finally the work supplies the clothier with an absolutely safe guide by which to size and age Juvenile Clothing. In its scope all garments are included,—anything needed to proportion;—a shirt or an ulster, a glove or a shoe, a shirt collar or cuff, a wrist band or a pant's bottom will be found for immediate use.

As to whom it can be used by to advantage: it ought to be in the office of every manufacturer, jobber or retailer of clothing, and should be supplied to all traveling Clothing salesmen. It is needed by the managers of Juvenile Clothing departments; by those receiving or executing special orders for children's garments; by merchant tailors; by clothing cutters of all branches; by students of cutting; and by every man and woman connected with the production of Juvenile clothing or patterns.

Its uses and advantages are more fully stated in the following extract from West's Report of Fashions, Fall, 1879–80:

> "We call attention to the work on Human Proportions, by Mr. Ryan, a small sketch of which appears in this Magazine. This work has been more thoroughly mentioned from time to time in the Monthly. The reader does not get a definite idea of the value of this master-piece from the short notice given by the Author. The production is undoubtedly worthy of appreciation, and we could not speak too highly of it: first, from our own knowledge; and secondly, from the expressions given by those who are using it. We are of the opinion that every person, in any way connected with Merchant Tailoring, as well as Clothing, should have one in his pocket."
>
> "The condensed form in which it is gotten up is admirable, and worthy of consideration. It is made to fold and goes into an envelope that can be carried in the breast pocket, and at the same time contains a complete set of Proportions for boys, for children, and for youths, from the time of dropping their swaddling clothes until they arrive at manhood. The reason that Cutters and Merchant Tailors should have this is because it runs into men's garments and contains many indispensable things. No one is a Cutter unless he understands the production of juvenile garments. A Cutter may learn to measure and cut men's garments and commit the same to memory; but the production of juvenile garments he could not. Mr. Ryan has been years compiling this work, and uses it every hour in the day, and could not conduct the business he does without it. I have one in my pocket and I do not see how I could get along without it. I am using it all the time and recommend others to have the work.
>
> J. B. WEST."

In conclusion, it may be stated that the "Proportions in Growth" are for the period of juvenile growth. The harmony of the law is suspended at maturity when the body grows in girth unequally, the parts being affected by exercise, occupation or mode of life, so that the hands, feet, neck, calves, thighs, etc. are in proportion to breast, seat and height, only in an exceptional degree.

How to use the Table of Height.

MAKE CLOSE REFERENCE TO THE INDEX COLUMN, AND APPLY THE HEIGHT SCALE AS EACH EXAMPLE IS GIVEN.

THE human form, (when proportionate,) by the natural law of stature is divided into eight equal parts or sections, the location and extent of each being clearly defined, as (1) the head, (2) the shoulders, (3) the body to natural waist, (4) the hips and seat to fork, (5) the thighs, (6) the knees, (7) the calves, (8) the ankles; each part being one-eighth of the entire height, which, by sub-dividing each part into eight, gives sixty-four parts for the entire height.

ILLUSTRATION. A figure sixty-four inches high, divided as above, gives eight parts each eight inches, or one inch for each sixty fourth part of the height.

A figure seventy-two inches high (six feet). One-eighth of seventy-two is nine, thus giving eight parts each nine inches, which being sub-divided to one-eighth of nine inches, gives one and one-eighth inches for each sixty-fourth of the entire height.

A figure thirty-two inches high. One-eighth of thirty two is four, thus giving eight parts each four inches, which being sub-divided to one-eighth of four inches, gives one half-inch for each sixty-fourth of the entire height.

The heights of ALL figures are to be divided into or considered as composed of sixty-four parts, of which eight parts form each section.

The leg is one-half the entire height of the body, less one sixty-fourth; or the fork point is one sixty-fourth below the center of body, H.

The table of height is based on a scale of one-eighth of an inch to the inch, and all heights on the page, and their smallest subdivisions or fractional parts, can be instantly found by dropping the Height Scale on to the line of height used, placing the X end of scale on line B, and from there down, every cross section of the body will be indicated in full inches.

Illustration To find the lengths of a forty-nine inches height, drop the height scale, as instructed, on line B, and it will indicate 12½ to natural waist, 17⅞ to largest part of the seat, 19½ to the fork point, 22¼ to the middle of thigh, 28⅞ to the upper part of knee hollow and also to top of knee cap, 34½ to middle of calf, 40¾ to the ankle, and 42¾ to sole of foot.

For a fifty-five inches height, the measures will be 14, 20, 21¾, 25, 32⅓, 38⅔, 45⅞, and 48⅛.

For a sixty-eight inches height, the measures will be 17, 24½, 26¾, 30½, 39⅞, 47¾, 56¾, and 59¾.

This illustrates the general application of the Height Scale for all heights. Its special application is based on the requirements of style and fashion, as they may change the lengths of garments.

THE LOCATION OF LENGTH FOR GARMENTS.

Children's Jackets, Blouses, etc. and Men's, Youths' and Boys' Sacks range from I to K. The style lengths generally prevailing up to 1880 are given by lines RR, SS, TT.

Walking Coats and Business Frocks, one-third of K–L, below K. Waists of Frocks, full or style length, one-quarter of F–I, below F, and Business Frocks about one-quarter inch longer.

Double Breast Frocks, full length, range from one-half of K–L to M. Present style about L.

Overcoats range from L to N, present style about M for Children, Boys and Youth, and one-quarter of M–N below M for extra long coats for Children from two to six years.

Ulsters range from N to one-half of O–P, present style about N.

Children's one piece Kilt Suits range from M to N, present style one-third of M–N, below M. Kilt Skirts, including a two inch waist band, range from F to N, less one-quarter of F–I. Style length changes very slightly.

Children's Shirt Waists. Length to the waist seam, B to F and one quarter of F–I. A button band is to be added, the width is of minor importance, and not estimated in the length proper.

Shirt lengths, B to K.

Capes for Raglans and Inverness, and plain capes to button on, etc. Length B to about H. Plain capes about three quarters of F–I, below F. The latter are shortest.

Cloaks range in length from K to L, present style one-half of K–L.

Long Blouse Jackets to go with a kilt skirt range from R to K, present style K.

Vests, back length, from B to one-third of F–I, and forepart length from B to H for children, and from B to G for boys and youths. This length of forepart is to be applied from the shoulder point to bottom of vest at front. It gives a long vest of present style. The length ranges from one half of F–I to I.

LOCATION OF POCKETS.

The style of garments and their lengths govern to some extent the location of pockets, but on general principles and in conformity to the height of figure, the hip pockets for under coats should be located about half way between F and I, and for over garments about three-quarters of F–I below F. The measure is applied down the back seam of the garment and pocket located on a line opposite the amount

The foregoing lengths, given to include what is in general use up to 1880, show where they occur on the human form in reference to its entire height, and the special section for each garment. In addition to their value as giving the standard lengths of the present great clothing stocks of the country, they will be found of the greatest value as a reference and guide in the future for making proportional changes.

The basis of proportions being given for a fashionable stock of clothing suitable to the present time, the following is the method of changes for every possible demand for all time to come.

It being known that a garment has been changed to a longer or shorter style than previously cut, it is only necessary to observe how much it is changed by its proportional length on any one height, and its proportional length on all other heights can be instantly ascertained. For instance, if Sack Coats have been changed to reach the middle of the thigh, we find that location to be one-half of I–K, which on a sixty-eight inches height gives a 30½ coat, on a sixty-four inches height a 28½ coat, and on a sixty inches height a 27 coat: so that the length forms a proportion of the distance between the fork, I, and the middle of the thigh, K.

This is the method and the principle used to establish lengths of all garments. No matter what kind of a garment, be it ever so long or short, its length is located in some one of the sections of the body. Its location in that section is noted as a part or quantity of it by division, and the same section of any other height is to be similarly divided to learn the same relative position, by which to establish a full length for any other garment.

As a final example.—If an overcoat, reaching ten inches from the sole of the foot, is found to be right on a boy ten years old; and a set of patterns is desired of four to ten years; we apply the height scale to fifty-one inch height, noting ten inches up from sole of foot We find that location to be about five-twelfths of M–O, and five-twelfths of M–O from line B is 34½ inches; then five-twelfths of M–O on height thirty-nine inches, four years, is located; from line B to the five-twelfths is found to be 26¾ inches, which gives for the latter age a garment reaching to within seven and one-half inches of the sole of shoe, and this would be in harmony with the entire height.

Table of Widths.

Reverse side of Chart.

Scale of Breast or Seat.

AT lower right hand corner of reverse side of chart, will be found a set or table of scales to be used for either breast or seat measure. They are in reduced form, being one-quarter of an inch to the inch, and each scale represents one-half of the entire breast or seat measure, divided into eighteen parts. They are given from twenty to fifty inches breast or seat, and the full size of either is indicated by the column of numbers at the right hand side, which makes the selection of a scale readier than by numbering each scale to one half the breast or seat measure.

To find the circumference in inches of the different parts of the body in proportion to the breast or seat measure, the following is the method. A breast measure is known or selected, say twenty-seven inches, and the size of scye, fist, wrist and neck is to be ascertained. On the Table of Width select scale 27, and place the Width Scale along the line extending out of that number, placing the X end of the scale even with the line AA, or right hand side of the table. With the scale held in that position, refer to the Column of Parts, and where the same number of parts on the Table of Width crosses the Width Scale, will be the size in inches, which in this case is scye 12½ inches, fist 8½, wrist 5⅓, and neck 11¼ inches.

To ascertain the size in inches of parts proportioned to the seat measure, viz :—the thigh, knee, calf, bottom of knee pants and fork points, the size of seat being known, a scale is selected on Table of Width to correspond, say thirty inches seat, and the Width Scale is placed on the line extending out of 30 on the Table, in the same manner as directed for the breast scale. Again refer to the Column of Parts, and where the same number of parts on the Table of Width crosses the Width Scale, will be the size in inches of each part, which in this case for a thirty inch seat will be, thigh 16⅝ inches, knee 12⅝, calf 10⅞, fork points 4¾ inches. For size of thigh two parts have to be added to the Table of Width.

The formula condensed will then be:

Breast, . . .			27 inches.	Seat, . . .			30 inches.
Scale, . .			27 size.	Scale, . .			30 size.
Scye,	16½	parts or	12½ inches.	Thigh,	20	parts or	16⅝ inches.
Fist,	11	"	8½ "	Knee,	15	"	12⅝ "
Wrist,	7	"	5⅓ "	Calf,	13	"	10⅞ "
Neck,	14¾	"	11¼ "	Fork,	5⅝	"	4¾ "

General Remarks.

MY purpose in this work is to meet the requirements of the Clothing Trade, by supplying a practical basis on which to produce correctly sized patterns from which can be manufactured Clothing that will satisfy the demands of both seller and buyer in all parts of the country, and in fact, will adapt the work produced to the wants of the million.

This work will be used mainly by two classes: the professional cutters who will from it obtain the natural proportions of the body to use in connection with their own system of drafting to size and age patterns correctly; and by those who desire to become thoroughly informed as to the sizes for children of all ages, and the proper proportions and measures of children's garments. To the former I would say, that any system of drafting that will fit a fine garment for a man, will answer for children's garments, with the exception that generally the shoulder must be made one-quarter to one-half inch longer, or the back the same amount shorter. The grand secret in cutting juvenile garments has been, not how to draft the patterns, but **what proportions to give them.** The common square with its divisions, and Human Proportions in Growth are all that is necessary.

The critic, ever watchful of faults, fallacies or failures, when he casts his searching eye along the line indicating the ages, and looks at the columns of height, size around, and general measurement for each age, will rise for an explanation. Full of the happy discovery that there are persons longer or shorter, thinner or stouter than indicated by the measurements for each age, he will ask, "What are going to do about them?"

If the Clothing trade of the country was conducted on the principle of accommodating exceptions, as such, there would be no limit; as every age would have to be dealt with by its proper average, and then all the grand exceptions to each age, from Barnum's Fat Boy to General Mite, taken in and provided for. Fancy such a stock!

There is an average height and size for each age during juvenile growth, and the great success of the Children's Clothing Trade is due to the fact that manufacturers have adapted their garments as nearly as possible to the proportions of the correct average for each age. In a stock of clothing sized for age, when a boy of eight years is as large as one of nine or ten years, he is provided with nine or ten year garments; when he is undersized, he is dealt with correspondingly in small garments, and is made happy with nicely proportioned garments,—as happy as I trust the critic is, with this brief explanation showing that exceptions are not treated as such, but dealt with according to their girth or height, irrespective of age, when their proportions and age do not correspond.

Correctly proportioned garments, perfect in balance, handsome in outline and shape, intended to fit only perfect forms, and not intended or cut to fit imperfect ones, have been the means used by the Clothing Trade to insure a success that is almost unprecedented. On general principles, a garment cut to correct proportions and handsome shape, will appear entirely superior and give more satisfaction to an ill shaped subject than one that fits the deformities of ordinary degree. Hence, the Clothing Trade fills every want by supplying a perfect covering for a perfect body, and a handsome disguise to cover artistically what is wanting in the imperfect one.

Garments to Order or Measure.

A few lines under this head will show the great value of the work.

In the majority of cases where measures are sent by buyers, the most important ones are not taken, are missed, or are imperfect in one or many ways. With the full height and breast measure (the full height is generally taken with shoes on, and an inch must be deducted for heels before selecting the height in the table) every other measure can be learned with a very great certainty.

For example, a measure is received giving the breast measure 27, leg seam 24, and a few proof measures of minor importance, but no arm, sleeve, waist, hip, waist length coat length, pant bottoms, etc.

For a solution, turn to the back page of the Table, and going down the left hand column to the third or breast line, select 27 breast and note all the proportions agreeing with it, as 27 breast, 25½ waist, 29 hip or seat, 8½ fist, 11¼ neck of shirt, 12½ scyc, etc. Observe next the proportions that agree with size of seat; next select the height that agrees with a 24 leg seam, which will be found in the second row of figures, and over the leg measure, 51 inches; turn to the Table of Height 51, and all the lengths that agree therewith will be correct. These will be, vest back length 15¼, front length 19½, pants to knee 17, side seam 31, leg seam 24, seat 29, waist 25½, thigh 16, knee to style, (about one inch more than bottoms), bottoms 15¼, fork points 4½.

In all cases the anatomical length of leg is to be rated one half inch longer than the leg seam of pants, as in this case the leg on table of height of 51 inches will be found 24½ inches. If the leg length was given as 23 instead of 24, all the lengths of or corresponding to 49 height should be used; if a 25 leg measure, the lengths of a 53 height, and so on.

Use the proportions of the full height for lengths of the body, the proportions of the breast measure for the sizes of upper parts of the body, and proportions of the seat for lower parts. Where the body is long and the legs short, or the reverse, use the scale of height adapted to leg length for all below I, and the scale of height adapted to the body length for all between B and I, when it is desired to cut garments to correspond.

A close and careful study of the Index Column and the parts noted by corresponding letters on Table of Height, and the application of Height Scale to illustrate the study, will insure a clear understanding of it in a few minutes.

The Law of Growth.

The theoretical standard laid down of dividing the full height into sixty-four parts, and eight sections of eight parts each, is thousands of years old, and correct in principle when applied to proportionate forms. The modifications necessary to render it entirely practical as a basis by which to give all sizes of garments their appropriate lengths, have been defined in this work. Your attention is specially directed to the following explanation.

During early childhood, the body is longer in proportion than the legs and arms. This disproportion decreases, by force of a natural law, as the child grows and brings the limbs into use, until at full growth the natural standard of proportion is reached. The Table of Height is based on this comparative disproportion during childhood; and the eight sections of the body are divided into four long sections for the upper and four short sections for the lower part. The discrepancy is not in the law or its application; and the requirements of the figure are met by a proper division of the unequal parts. The eight sections of the 32 height, instead of being equal parts of the entire height, are equal fourths respectively of the body above and below the fork, the disproportion decreasing little by little in each height, until at sixty-four inches height the proportionate division of eight equal parts, and the theoretical standard is reached.

In making patterns for the clothing manufacturing trade, use the Table of Height exactly as laid down; in order work as previously instructed.

Explanation of Terms.

Line of Height.—The line extending perpendicular to the full length of figure from crown of head to sole of foot, or from A to Q.

Line B.—Is the line from which all measures for body lengths of garments start.

Line C.—Is the natural socket bone line, but line B is substituted as a starting point, to give the difference in length required by the curved form of the human body.

Line I.—Is the fork point line, from which all divisions of the leg measure lengths are to be estimated. Between lines I and F the rise of pants and division for fashion lengths of waist are to be made.

Index.—The index column on the lower right hand corner of the title page, contains letters corresponding to letters on the lines of height which designate the different lines that divide the body into sections cross wise. Each cross line is explained in the body of the index opposite its letter.

Table of Height.—Is a table containing all the lines of height of the human figure from 32 to 72 inches, with fractional parts between, and containing also all the cross lines that divide the body into parts.

Height Scale.—Is a scale divided into parts of one-eighth of an inch to the inch. It is to be used only on the lines of height, the quantities indicated by it are full inches.

Table of Width.—Is a miniature set of breast scales, of one-half the breast or seat measure, divided into eighteen parts. The table is arranged or reduced to a scale of one quarter of an inch to the inch.

Width Scale.—Is a scale to be used on the table of widths ONLY. It is arranged to a scale of one quarter of an inch to the inch, and indicates what any number of parts (of any scale) are in full inches.

Formulas in Proportions.—Are rough and ready methods to be committed to memory, for use in the absence of the chart itself.

PROPORTION IN PARTS. The relative size of any part of the body, in proportion to the breast or seat, is indicated by the number of parts in the COLUMN OF PARTS; and the size in inches is obtained by applying the width scale to the table of widths on the line of the breast or seat measure scale :—where the same number of parts crosses the width scale that will be the size in inches.

COLUMN OF PARTS. This column indicates, by the number of parts that form a proportion of the breast or seat measure, the relative size of all other circumferences of the body; and the size, in inches, of any number of parts is ascertained by applying the width scale to the same number of parts on the table of widths.

In the Table of Measures at the top of the Title and back pages, all the amounts under the line of Ages are given in inches. The measure for any age will be found in the column under it.

Sizing Garments.

This very important feature is one outside of the natural sizes given in the Tables, and to be departed from according to circumstances in making patterns. Any system of cutting that produces close garments by the Table measure, as laid down, will need the following additions and allowances in making patterns for the Clothing Trade. The allowance of extra size is to be added to both breast and seat and will be found in the column "EXTRA SIZE ADDED." The column "MAKE-UP ALLOWANCE" contains the amounts always used as allowance for seams, make-up and ease.

In the Custom Trade, the extra size added will produce very easy garments.

GARMENT.	SEASON.	MAKE-UP ALLOWANCE.	EXTRA SIZE ADDED.	BUTTON STAND.	REMARKS.
Long and Knee Pants,	Spring	2 inches.			
" " " "	Winter	2 "	1 inch,		Added to seat only.
S. B. Blouses,	Winter	2 "	¾ "	¾ inch.	
" "	Spring	2 "	½ "	¾ "	
Sacks, Jackets, &c,	Spring	2 "	¾ "		Garments covering a vest.
" "	Winter	2 "	1 "		
One Piece Kilt Suits,	S and W	2 "		¾ "	**3-4 inch button stand if S.B.** **2 1-2 inch lapel if D.B.**
All Garments with Sidebodys,		2½ "			
Vests,		2 "		¾ "	
Overcoats, Single Breast,	Spring	2½ "	2½ "	1 "	To button through.
" " "	Spring	2½ "	2½ "	2½ to 3 in.	Lapel for regular fly fronts.
" " "	Winter	2½ "	3 "	2½ to 3 in.	" " "
" Double "	Winter	2½ "	3 "	3 inch.	Regular lapel for D. B.
Ulsters, S and D "	S and W	2½ "	3 "		Same as Overcoats generally.
Blouse Jackets for Kilts,	Spring	2 "	½ "	¾ "	For S. B. button up
" " "	Winter	2 "	¾ "	¾ "	3½ inch lapel for Double Breast.
Dusters,		2½ "	2 "	1 to 3 in.	Same as fronts of Overcoats.
Linen's Lusters, &c.					**Draft to the Table sizes.** **Add to the seams if hemmed.**
Youths' Garments,					Same allowance as for men.

Age	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Remarks
Height inches	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	64	65	66	67	68	Without Shoes
Breast	21	21¾	22½	23¼	24	24¾	25½	26¼	27	27¾	28½	29¼	30	30¾	31½	32¼	33	34	35	36	On the Vest
Waist	21	22	22½	23	23½	24	24½	25	25½	26	26½	27	27½	28	28½	29	29½	30	30½	31	On the Pants

Age	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	**REMARKS.**
Height	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	64	65	66	67	68	Without Shoes
Breast	21	21¾	22½	23¼	24	24¾	25½	26¼	27	27¾	28½	29¼	30	30¾	31½	32¼	33	34	35	36	On the Vest
2nd "	22	22½	23	23½	24		24	25	26	27	28	29	30	31	32						Trade Sizes, for Kilts. Schools and Boys
Waist	21	22	22½	23	23½	24	24½	25	25½	26	26½	27	27½	28	28½	29	29½	30	30½	31	On the Pants
2nd "	22	22½	23	23½	24																For Kilt Skirts
Hip	23	23¾	24½	25¼	26	26¾	27½	28¼	29	29¾	30½	31¼	32	32¾	33½	34¼	35	36	37	38	On the Pants
Leg						21	22	23	24	25	26	27	28	29	30	30½	31	31½	32	32½	Trade Length
2nd "	7	7¾	8½	9¼	10	10¾	11½	12¼	13	General Trade Average.											Knee Pants
Arm	15^2	16^2	17^2	18^2	19^2	20^2	21^2	22^2	23^2	24^2	25^2	26^2	27^2	28^2	29^2	30	30^2	31	31^2	32	Sleeve Length Add Seams } O. C. ½ in. ex.
Shoe &	6	7	8	9	10	11	12	13	1	2	3	4	4½	5	5½	6	6½	7	7½	8	Shoe Trade Sizes
Bottoms						14½	14¾	15	15¼	15½	15¾	16	16¼	16½	17	17½	18	18½	19	19½	Ordinary 1875 to 1879

Proportions in Parts by Scale of Breast or Seat. 18 Parts to ½ Breast.

Scye	Around Schoulder;-On the Shirt	16½ Parts	Scale of Breast	4 to 6 Seams
Fist	Closed.-Around all the Knuckles	11 "	" " "	2 " 4
Wrist	Around the Joint	7 "	" " "	" " "
Blade	Front of Arm to center of Back	11½ "	" " "	3 " 5
Neck	Lowest Part -Bare Neck	14¾ "	" " "	4 " –
Gorge	High, Close Button "	17 "	" " "	4 " –
Thigh	Undress Side,-Add 1½ Inches	20 "	" " Seat	4 " –
Knee	Around the Joint (On Stocking)	15 "	" " "	4 " –
Calf	Largest Part " "	13 "	" " "	0
Bottoms	Ordinary Size for Knee Pants	16 "	" " "	" 4
Hip Rise	From Fork to Waist (Approximate)	9½ "	" " "	2
Fork Points	Between, and through Legs	5⅝ "	" " "	0

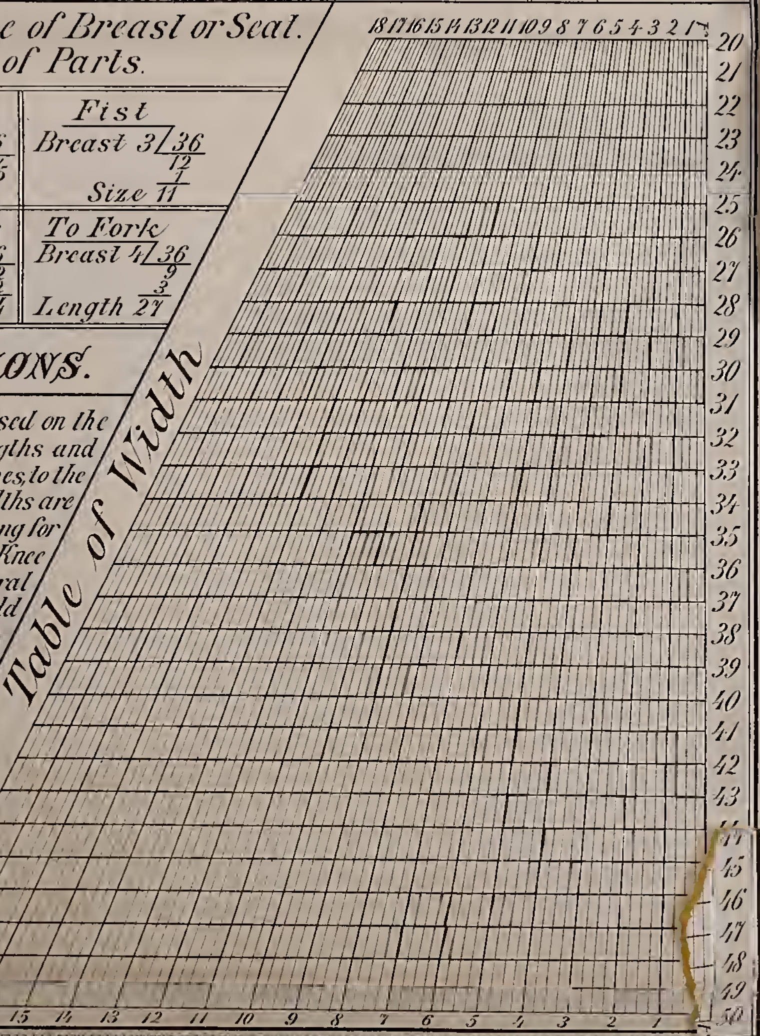
Close Neat Measure of Actual sizes without seams. all seams must be added-allow ¼ of an inch for each: number of seams in next column.

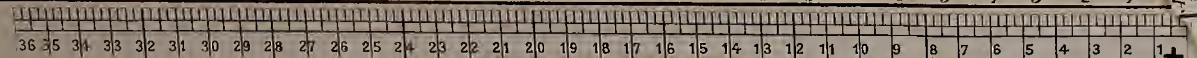
Formulas in Proportion by size of Breast or Seat. To find Relative Size of Parts.

Neck Breast 2 ⟌ 36 6 ⟌ 18 3 Size 15	Hand Breast 4 ⟌ 36 Size 9	Wrist Breast 5 ⟌ 36 Size 7⅕	Fist Breast 3 ⟌ 36 12 1 Size 11
Thigh Seat 2 ⟌ 36 8 ⟌ 18 2¼ Size 20¼	To Natl. Waist Breast 2 ⟌ 36 18 1 Length 17	To Glutæs Breast 3 ⟌ 36 12 2 Length 24	To Fork Breast 4 ⟌ 36 9 3 Length 27

GENERAL OBSERVATIONS.

The foregoing tables of proportions are based on the Natural Law & Harmony of Growth & the lengths and girths given are, as near as possible in inches, to the absolute quantities. Some lengths and widths are based on a general average of styles prevailing for a number of years; for example, the lengths of Knee Pants, Childrens, Boys, & Youth's Sacks. Natural length of arm below wrist-joint is given;-add all the seams & for Over Coat ½ to ¾ in addition. The Size of Fist is the best average size of Cuff (made up) for Under-Coats,-¾ larger for O. C's.— Waist measure given is close on Pants; allow 1 inch for waists of Vest and Coat. The Scales given, are one half breast, divided into 18 parts.— The Rise of pants (I to F Table of Height) has to have in addition a two inch band on Knee Pants and regular band on long Pants.——





WIDTH SCALE.

Age	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Remarks
Height Inches	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	64	65	66	67	68	Without Shoes
Breast	21	21¾	22½	23¼	24	24¾	25½	26¼	27	27¾	28½	29¼	30	30¾	31½	32¼	33	34	35	36	On the Vest
Waist	21	22	22½	23	23½	24	24½	25	25½	26	26½	27	27½	28	28½	29	29½	30	30½	31	On the Pants
Hip	23	23¾	24½	25¼	26	26¾	27½	28¼	29	29¾	30½	31¼	32	32¾	33½	34¼	35	36	37	38	Size of Seat
Leg	16½	17½	18½	19½	20½	21½	22½	23½	24½	25½	26½	27½	28½	29½	30½	31	31½	32	32½	33	Anatomical length
Arm	15^2	16^2	17^2	18^2	19^2	20^2	21^2	22^2	23^2	24^2	25^2	26^2	27^2	28^2	29^2	30	30^2	31	31^2	32	To Wrist,-Elbow bent
Thigh	12¾		13⅝		14½		15⅜		16⅛		17		17¾		18⅝		19½		20½	21	Close Undress Approximate
Neck	8¾		9⅜		10		10⅝		11⅛		11⅞		12½		13⅛		13¾		14½	14⅞	Band of Shirt

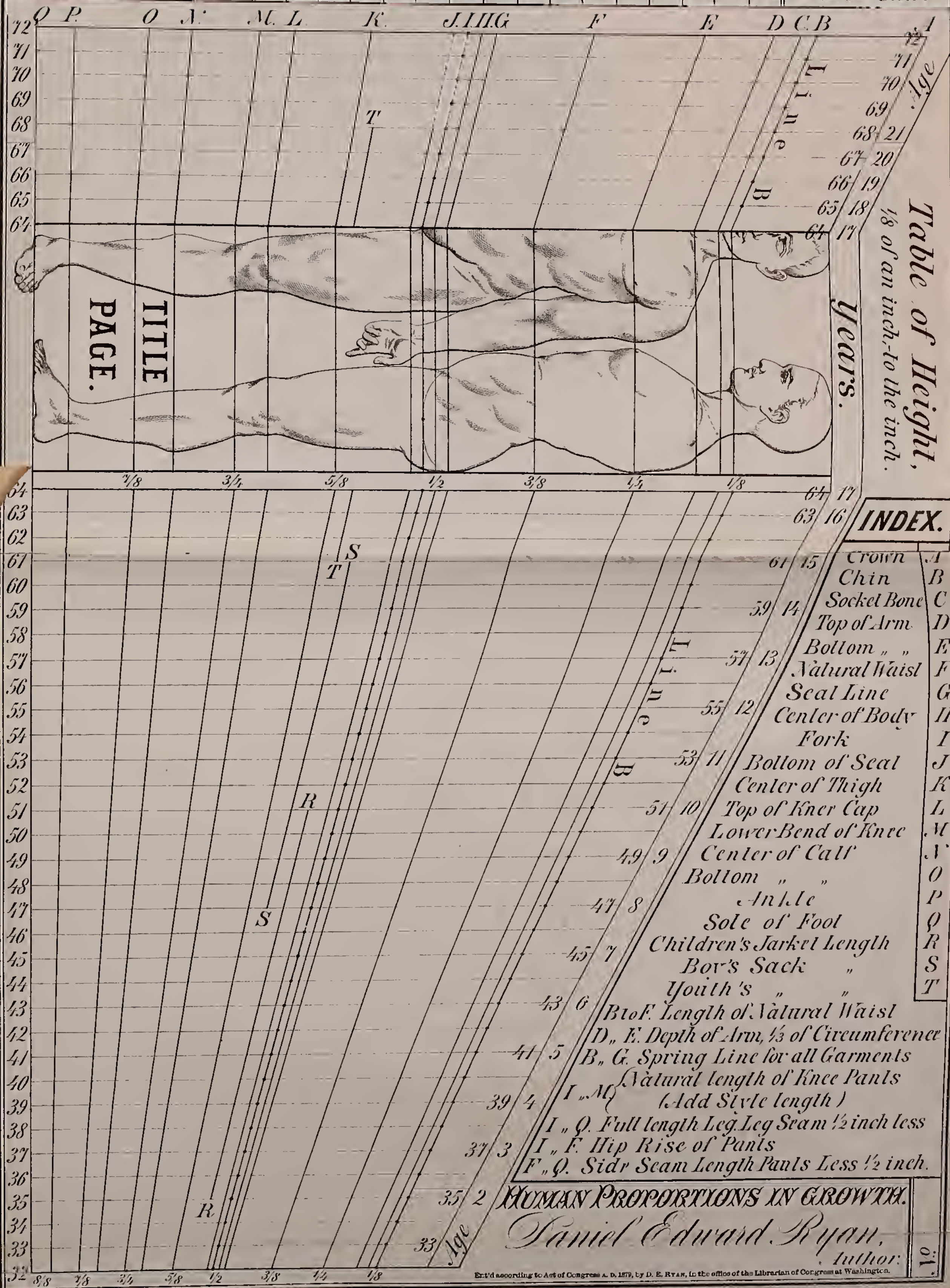


Table of Height, ⅛ of an inch-to the inch.

INDEX.

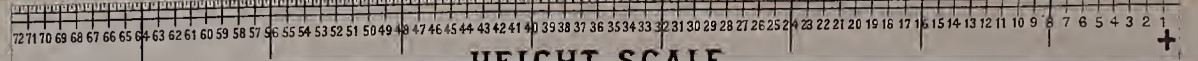
Crown	A
Chin	B
Socket Bone	C
Top of Arm	D
Bottom " "	E
Natural Waist	F
Seat Line	G
Center of Body	H
Fork	I
Bottom of Seat	J
Center of Thigh	K
Top of Knee Cap	L
Lower Bend of Knee	M
Center of Calf	N
Bottom " "	O
Ankle	P
Sole of Foot	Q
Children's Jacket Length	R
Boy's Sack "	S
Youth's " "	T

B to F. Length of Natural Waist
D " E. Depth of Arm, ⅓ of Circumference
B " G. Spring Line for all Garments
I " M. { Natural length of Knee Pants (Add Style length)
I " Q. Full length Leg. Leg Seam ½ inch less
I " F. Hip Rise of Pants
F " Q. Side Seam Length Pants Less ½ inch.

HUMAN PROPORTIONS IN GROWTH.

Daniel Edward Ryan,
Author.

No. 1



HEIGHT SCALE.